

**ARGULUS MEGALOPS** Smith, sp. nov. (p. 452.)

Carapax subelliptical, longer than broad; the antero-lateral margin with a deep sinus; the posterior lobes of the carapax, each side of the shallow and narrow sinus, broadly rounded. Eyes very large, their diameter a tenth as great as the breadth of the carapax. Body projecting much beyond the posterior margin of the carapax. Tail somewhat ovate, about two-thirds as broad as long, the sinus only a small notch, extending not more than a tenth of the length. Natatory legs very long, all projecting beyond the carapax. Squamiform appendages upon the bases of the prehensile legs, with a pappilose area upon the expanded portion, and the posterior margin armed with three rather slender teeth, separated by broad spaces; the terminal segment of the leg armed with two small hooks.

Color of alcoholic specimens, yellowish white.

Length, 2.2<sup>mm</sup>; length of carapax, 1.3; breadth of carapax, 1.0; length of tail, 0.7; breadth of tail, 0.47.

Vineyard Sound, taken at the surface, July 8.

**ARGULUS ALOSÆ** Gould. (p. 459.)

Invertebrata of Massachusetts, p. 340, 1841.

Parasitic upon the alewife in Massachusetts Bay, according to Gould.

**CALIGUS CURTUS** Müller. (p. 459.)

Entomostraca, p. 130, Pl. 21, figs. 1, 2, 1785; Kroyer, Nat. Tidsskrift, vol. i, p. 619, Pl. 6, fig. 2, 1837. *Caligus Mülleri* Leach, Encycl. Brit., Suppl., vol. i, p. 405, Pl. 20, figs. 1-8, 1816, (teste Baird et al.); Baird, British Entomostraca, p. 271, Pl. 32, figs. 4, 5. *Caligus Americanus* Pickering and Dana, Amer. Jour. Sci., vol. xxxiv, p. 225, Pl. 3-5, 1838; Dana, U. S. Expl. Expd., Crust., Pl. 93.

Abundant upon the cod-fish of our coast and of Europe. It is probably the *Caligus piscinus* of Gould and other American writers.

**CALIGUS RAPAX** Edwards. (p. 457.)

Hist. nat. des Crust., tome iii, p. 453, Pl. 38, fig. 9-12, 1840; Baird, op. cit., p. 270, pl. 32, figs. 2, 3; Steenstrup and Lütken, Bidrag til Kundskab om det aabne Havs Snyltekrebs og Lernæer, p. 359, Pl. 2, fig. 4, 1861.

Vineyard Sound, on the sting ray, (*Trygon centroura*), and small specimens, both male and female, taken at the surface at Wood's Hole, September 3, in the evening. These specimens from the surface, according to Professor Verrill's notes, were light flesh color, thickly speckled with minute brown spots, the eyes bright red.

**LEPEOPHTHEIRUS**, species. (p. 459.)

A species with a long tail, and somewhat like the *L. gracilis*, (Van Benaden sp.), was found upon the sting ray (*Trygon centroura*) taken in Vineyard Sound.

**LEPEOPHTHEIRUS**, species. (p. 459.)

A species with a very short tail, and approaching Heller's genus *Anuretes*. South shore of Long Island, upon a flounder, (*Chænopsetta ocellaris*.)

The *Lepeophtheirus salmonis* Kroyer, is found upon the salmon of the northern coast of New England.

**ECHTHROGALEUS COLEOPTRATUS** Steenstrup and Lütken. (p. 459.)

Op. cit., 380. *Dinematura coleoptrata* Guérin, Icnographie du Règne animal, Crust. Pl. 35, fig. 6. *Dinemoura alta* Baird, British Entomostraca, p. 285, Pl. 33, figs. 6, 7.

Vineyard Sound, September 19, from the back fin of the mackerel-shark, (*Lamna punctata*.) It has been found upon the English coast and off the Azores.

**ECHTHROGALEUS DENTICULATUS** Smith, sp. nov. (p. 459.)

Carapax broader than long, with a very slight median emargination in the outline of the front. Posterior portion of the body scarcely longer and not quite as wide as the carapax. Dorsal plates, or elytra, covering much more than half the genital segment, their inner and posterior margins armed with a regular series of small teeth. The posterior lobes of the genital segment somewhat triangular and each terminated by a stout spine. Dorsal plate of the tail elongated, obtusely rounded at the extremity, and exposed from above by the very broad sinus in the genital segment. The tail itself broad, somewhat rectangular, but narrowed distally and not projecting behind the dorsal plate; the terminal lamellæ nearly as long as the tail, narrow, linear, nearly three times as long as broad, and armed at the tip with several setæ.

Length, 9<sup>mm</sup>; breadth of carapax, 5.1; length of elytra along the inner margin, 2.5.

Vineyard Sound, on Atwood's shark, (*Carcharias Atwoodi*.)

? **PANDARUS CRANCHII** Leach. (p. 459.)

Dict. des Sci. nat., tome xiv, p. 535, 1819, (teste Edwards et al. ;) Edwards, Règne animal de Cuvier, 3<sup>me</sup> éd., Crust., Pl. 78, fig. 2; Steenstrup and Lütken, op. cit., Pl. 11, fig. 22.

A number of specimens of a *Pandarus*, taken from a dusky shark (*Eulamia obscura*) on the south side of Long Island in 1870, differ only very slightly from the figures and descriptions of *P. Cranchii* quoted above.

**PANDARUS**, species. Plate VII, fig. 31. (p. 457.)

Vineyard Sound, on Atwood's shark, (*Carcharias Atwoodi*.) It is, perhaps, only a variety of the last species, but differs considerably from it, wanting almost wholly the series of spines upon the posterior margin of the carapax, having the caudal appendages shorter and obtuse, besides some slight differences in the natatory legs.

**NOGAGUS LATREILLII** Leach. Plate VII, fig. 32. (p. 457.)

Dict. des Sci. nat., tome xiv, p. 536, 1819, (teste Edwards et al. ;) Règne animal de Cuvier, Crust., Pl. 79, fig. 3; Hist. nat. des Crust., tome iii, p. 459; Steenstrup and Lütken, op. cit., p. 384, Pl. 9, fig. 18.

Vineyard Sound, in company with the last species, on Atwood's shark. All the species of *Nogagus* are males of the allied genera, *Pandarus*,

*Echthrogaleus*, &c., and are only provisionally retained in a separate group, until it can be determined to which of these genera the different species really belong. This species is probably a *Pandarus*, and very likely the male of the last species.

Our specimens differ slightly from the figures given by Steenstrup and Lütken, the dentiform prominences on the sides of the genital segment in our specimens being much smaller than represented in their figures, the segments of the tail somewhat shorter and broader, and the terminal lamellæ also shorter and broader, while in other respects they agree well. Steenstrup and Lütken's specimens were taken from sharks caught in latitude 31° north, longitude 76° west, (in the Gulf Stream, off the South Carolina coast,) and in latitude 40° south, longitude 31° west, while Leach's came from latitude 1° south, longitude 4° east.

NOGAGUS TENAX Steenstrup and Lütken. (p. 457.)

Op. cit., pp. 384, 388, Pl. 10, fig. 20, 1861.

Vineyard Sound, with the last species, upon Atwood's shark. It has nearly as extended a range as the last species.

It is very different from the last species, having the branches of the posterior pair of natatory legs each composed of a single segment, and the tail also composed of a single segment, which is broader than long, and has the short, truncate caudal lamellæ attached to its obliquely truncated posterior angles. Length, 4.5<sup>mm</sup>.

This species probably belongs to a different genus from the last, and is perhaps the male of *Echthrogaleus denticulatus*, with which it was associated. Both species of *Nogagus*, the *Pandarus* and *Echthrogaleus denticulatus*, were, however, all found on the same specimen of the shark, so that the association of males and females in one or two instances is not very good proof of their identity.

PANDARUS SINUATUS Say. (p. 459.)

Loc. cit., p. 436, 1818.

This species is apparently, as far as can be judged from Say's description, allied to *P. bicolor* Leach, a European species, which is probably not congeneric with the species which we have previously mentioned.

CECROPS LATREILLII Leach. (p. 459.)

Encycl. Brit., Suppl., vol. i, p. 405, Pl. 20, 1816, (teste Edwards et al. ;) Edwards,

Hist. nat. des Crust., tome iii, p. 475; Baird, op. cit., p. 293, Pl. 34, figs. 1, 2.

According to Gould, (op. cit., p. 341,) this species has been found upon the sun-fish (*Orthogoriscus mola*) taken on the coast of Massachusetts.

ANTHOSOMA CRASSUM Steenstrup and Lütken. (p. 460.)

Op. cit., p. 367, Pl. 12, fig. 24, 1861. *Caligus crassus* Abildgaard, (teste Steenstrup and Lütken,) Naturh. Selsk. Skr., Bind iii, p. 49, pl. 5, [1794 ?] (teste Kroyer.) *Anthosoma Smithii* Leach, Encycl. Brit., Suppl., vol. i, p. 406, Pl. 20, 1816, (teste Edwards et al. ;) Kroyer, Nat. Tidsskrift, vol. i, p. 295, Pl. 2, fig. 2, 1836; Edwards, Hist. nat. des Crust., tome iii, 493, Pl. 39, fig. 5; Règne animal de Cuvier, Crust., Pl. 79, fig. 3; Baird, op. cit., p. 299, Pl. 33, fig. 9.

According to Gould, (op. cit., p. 341,) *Anthosoma Smithii* has been

found upon the mackerel-shark (*Lamna punctata*) taken on the coast of Massachusetts.

**LERNÆA BRANCHIALIS** Linné. (p. 460.)

Systema Naturæ; Edwards, Hist. nat. des Crust., tome iii, p. 528; Steenstrup and Lütken, op. cit., p. 403, Pl. 13, fig. 28.

Found attached to the gills of the cod in the Bay of Fundy, and, undoubtedly, extends as far south as that fish. It is common in Northern Europe.

**PENELLA PLUMOSA** DeKay. (p. 460.)

Op. cit., p. 60, 1844.

Found, according to DeKay, upon *Diodon pilosus*, and a species of *Rhombus*.

**ANCHORELLA UNCINATA** Nordmann. (p. 460.)

Mikrographische Beiträge, Heft ii, p. 102, Pl. 8, figs. 8-12, Pl. 10, figs. 1-5, 1832; Baird, op. cit., p. 337, Pl. 35, fig. 9. *Lernæa uncinata* Müller, Zoologia Danica, vol. i, Pl. 33, fig. 2, 1788, (teste Nordmann et al.;) Van Benaden, Poissons des côtes de Belgique, Mémoires Acad. Royale Belgique, tome xxxiii, Pl. 2, fig. 7, 1871.

Found upon cod-fish taken at New London, Connecticut. It is a common European species.

**LERNEONEMA RADIATA** Stp. and Ltk. Plate VII, fig. 30. (p. 458.)

Op. cit., p. 400, 1861. *Lerneocera radiata* Leseur, Journal Acad. Nat. Sci., Philadelphia, vol. iii, p. 288, Pl. 11, fig. 1, 1824.

At Great Egg Harbor, New Jersey, and in Vineyard Sound and Buzzard's Bay, very common upon the menhaden, (*Brevoortia Menhaden*.)

**LERNEONEMA** ?, species. (p. 460.)

A species belonging to this, or a closely-allied genus, was found upon a species of *Carangus* taken in Vineyard Sound.

According to Gould, (op. cit., p. 341,) *Penella filosa* Cuvier, (Guérin, op. cit., Zoophytes, Pl. 9, fig. 3; Edwards, Hist. nat. des Crust., tome iii, p. 525,) has been found upon *Orthogoriscus mola*, and might, therefore, occasionally occur south of Cape Cod. The same author also mentions (p. 341) *Chondracanthus cornutus* Cuvier, (Nordmann, op. cit., p. 111, Pl. 9, figs. 5-10; Edwards, Hist. nat. des Crust., tome iii, p. 500, Pl. 40, figs. 18-22,) and *Branchiella Thynni* Cuvier, (Edwards, op. cit., tome iii, p. 512; Steenstrup and Lütken, op. cit., p. 420, Pl. 15, fig. 36,) as occurring upon the coast of Massachusetts.

CIRRIPEDIA.

**BALANUS AMPHITRITE** Darwin. (p. 381.)

Monograph of the Cirripedia, pp. 240, 614, Pl. 5, fig. 2, 1854.

Found upon the bottoms of ships, but probably does not live long after arriving upon our coast. It is found in all the tropical and warmer temperate seas.

*Balanus tintinnabulum* Linné, (Darwin, op. cit., pp. 194, 611, Pl. 1, 2,

fig. 1,) occurs with the last species, but has not been noticed living. It has about the same range as the *B. amphitrite*.

**BALANUS EBURNEUS** Gould. (p. 381.)

Op. cit., p. 15, Pl. 1, fig. 6, 1841, Darwin, op. cit., pp. 248, 614, Pl. 5, fig. 4.

From Massachusetts Bay to Florida and the West Indies. It sometimes occurs in brackish or even fresh water. Professor J. Wyman found it living about 50 miles up the St. John's River, Florida, where the water was fresh enough to drink, and the specimens lived well when transferred to a vessel of perfectly fresh water.

**BALANUS IMPROVISUS** Darwin.

Op. cit., pp. 250, 614, Pl. 6, fig. 1.

Darwin gives this species as occurring in England, Nova Scotia, United States, West Indies, and South America, so that it undoubtedly occurs upon the coast of New England.

**BALANUS CRENATUS** Bruguière. (p. 381.)

Encyclop. Method., 1798, (teste Darwin;) Darwin, op. cit., pp. 261, 615, Pl. 6, fig. 6.

*Balanus rugosus* Gould, op. cit., p. 16, Pl. 1, fig. 10.

Dredged abundantly in Vineyard Sound. It ranges from the arctic regions of the Atlantic to the Cape of Good Hope and the West Indies.

**BALANUS BALANOIDES** Stimpson. (p. 305.)

Marine Invertebrata of Grand Manan, p. 39, 1853; Darwin, op. cit., pp. 267, 615

Pl. 7, fig. 2. *Lepas balanoides* Linné, Systema Naturæ, 1767, (teste Darwin.)

*Balanus ovularis* and *elongatus* Gould, op. cit., pp. 17, 18, Pl. 1, figs. 7, 8.

Extremely abundant between tides. It inhabits the whole North Atlantic.

**CORONULA DIADEMA** De Blainville. (p. 460.)

Diet. des Sci. nat., 1824, (teste Darwin;) Gould, op. cit., p. 12; Darwin, op. cit., pp. 417, 623, Pl. 15, fig. 3, Pl. 16, figs. 1, 2, 7. *Lepas diadema* Linné, Systema Naturæ, 1767, (teste Darwin.)

Attached to whales taken on the coast, both north and south of Cape Cod. It is found throughout the whole North Atlantic.

**LEPAS FASCICULARIS** Ellis and Solander. Plate VII, fig. 34. (p. 382.)

Zoophytes, 1786, (teste Darwin;) Darwin, op. cit., p. 92, Pl. 1, fig. 6.

Found in vast numbers in Vineyard Sound, in June and July, and frequently taken in the Bay of Fundy in August.

**LEPAS PECTINATA** Spengler. (p. 382.)

Darwin, op. cit., p. 85, Pl. 1, fig. 3. *Anatifa dentata* Gould, op. cit., p. 21, Pl. 1, fig. 11.

Attached to ships' bottoms, but probably does not live long after arriving on our coast. It lives throughout the warmer parts of the Atlantic.

**LEPAS ANATIFERA** Linné. (p. 382.)

Systema Naturæ, 1767, (teste Darwin;) Darwin, op. cit., p. 73, Pl. 1, fig. 1.

Occurs in the same way as the last species. It is common to the Atlantic, Pacific, and Indian Oceans, and the Mediterranean.

**LEPAS ANSERIFERA** Linné. (p. 382.)

Systema Naturæ, 1767, (teste Darwin;) Darwin, op. cit., p. 81, Pl. 1, fig. 4. *Anatifa striata* Gould, op. cit., p. 20.

This species probably occurs in the same way as the last. It has the same range.

**CONCHODERMA AURITA** Olfers. (p. 392.)

Darwin, op. cit., p. 141, Pl. 3, fig. 4. *Lepas aurita* Linné, Systema Naturæ, 1767, (teste Darwin.) *Olion Cuvieri* Gould, op. cit., p. 23.

On ships' bottoms, &c. It ranges through all the seas.

**CONCHODERMA VIRGATA** Olfers. (p. 392.)

Darwin, op. cit., p. 146, Pl. 3, fig. 2. *Lepas virgata* Spengler, 1790, (teste Darwin.) *Cineras vittata* Gould, op. cit., p. 22.

Occurs in the same way, and has the same range as the last species.

## XIPHOSURA.

**LIMULUS POLYPHEMUS** Latreille. (p. 340.)

Hist. des Crust., (teste Edwards,) Hist. nat. des Crust., tome iii, p. 549; Say, loc. cit., p. 433; Gould, op. cit., p. 339; Packard, Memoirs Boston Soc. Nat. Hist., vol. ii, p. 155, Pl. 3-5, 1872, (on the development;) A. Milne Edwards, Annales des Sci. nat., 5<sup>e</sup> sér., tome xvii, nos. 1 et 2, Dec., 1872, Pl. 5-16, (on the anatomy.) *Monoculus Polyphemus* Linné, Systema Naturæ; *Polyphemus occidentalis* Lamark, Hist. des Anim. sans vert.; De Kay, op. cit., p. 55, Pl. 11, fig. 50. *Limulus australis* Say, loc. cit., p. 436. *Xiphosura Polyphemus* White, List of Crust. in British Mus., p. 121, 1847.

Casco Bay, on the coast of Maine, to Florida.

## ANNELIDA.

## POLYCHÆTA.

**APHRODITA ACULEATA** Linn. (p. 507.)

Systema Naturæ, ed. xii, vol. i, p. 1084, 1767; Malmgren, Öfvers. af Kong. Vet.-Akad. Förhandlingar, 1865, p. 52; Johnston, Catalogue of British Non-Parasitical Worms, p. 101, Pl. 9, 1865; Quatrefages, Histoire naturelle des Annelés, vol. i, p. 191, 1865.

Off Gay Head in 15 to 19 fathoms, mud; Bay of Fundy, 10 to 106 fathoms, mud; St. George's Bank, 50 fathoms; northward to Labrador. Northern coasts of Europe to Great Britain and Mediterranean.

**LEPIDONOTUS SQUAMATUS** Leach. Plate X, figs. 40, 41. (p. 320.)

*Aphrodita squamata* Linn., Syst. Nat., ed. x, p. 665; ed. xii, p. 1084. *Polynöe squamata* Savigny, Syst. Annel., 20 (t. Quatr.); Quatr., op. cit., p. 218. *Aphrodita punctata* Müll., Zoöl. Dan. Prod., p. 218 (t. Malmgren). *Lepidonotus squamatus* Malmgren, op. cit., p. 56; Johnston, op. cit., p. 109, Pl. 7, fig. 1. *Lepidonote armadillo* Leidy, Marine Invert. of Rhode Island and New Jersey, p. 16, Pl. 11, fig. 54. *Polynöe dasypus* Quatr., op. cit., vol. i, p. 226.

Great Egg Harbor, New Jersey; New Haven; Watch Hill, Rhode Island; Vineyard Sound, &c. Very common north of Cape Cod to Labrador and Iceland; northern coasts of Europe; Great Britain; France.

In the Bay of Fundy it occurs abundantly from above low-water mark to the depth of 80 fathoms.

**LEPIDONOTUS SUBLEVIS** Verrill, sp. nov. Plate X, fig. 42. (p. 320.)

Body oblong, somewhat narrowed toward each end, entirely covered by twelve pairs of large scales, or "elytra," which, with the exception of the first and last pairs, are broad oval, evenly rounded posteriorly, the outer lateral edge with a fine fringe; the posterior margin smooth. Their surface is iridescent and nearly smooth throughout, and destitute of tubercles, but has minute rounded granules, and appears punctate under a lens. The scales of the last pair are elongated, with the inner edge curved inward, but without a distinct emargination, such as is seen in the preceding species. Setæ numerous, slender but stiff, amber-yellow. Scales usually reddish or greenish brown, finely specked with dark brown. Length up to 30<sup>mm</sup>; breadth, 8<sup>mm</sup>.

This species is easily distinguished from the last by its nearly smooth scales, the form of the last pair, and the lighter-colored and more slender setæ.

Savin Rock, near New Haven; Vineyard Sound.

**LEPIDONOTUS ANGUSTUS** Verrill, sp. nov. (p. 494.)

Body elongated, narrow, of nearly uniform width throughout, convex above. Twelve pairs of elytra, which are only slightly imbricated and hardly cover the back completely, there being often a narrow naked dorsal space, but when the elytra are closely appressed the back is nearly covered. The elytra are rather small, regularly oval, except those of the terminal pairs; outer edge irregularly fringed; surface covered with small, slightly prominent, roundish granules. Posterior elytra with a deep emargination on the inner margin. Head larger and relatively broader than in *L. squamatus*, convex, with well-rounded sides, eyes larger and farther apart. Antennæ rather short. Setæ shorter than in either of the preceding species, of nearly uniform length, rather rigid, light amber-colored, forming short dense fascicles. Color variable; in one specimen the scales were yellowish gray and brownish, varied with dark specks, and with a central subcircular or somewhat crescent-shaped white spot, surrounded by a circle of dark brown specks,

which form an irregular dark spot on the inner border of the pale central spot.

Reefs off Watch Hill, Rhode Island, in 4 or 5 fathoms, among rocks and algæ.

**HARMOTHÖE IMBRICATA** Malmgren. (p. 321.)

Nordiska Hafs-Annulater, op. cit., p. 67, 1865, Pl. 9, fig. 8, A-E. *Aphrodita imbricata* Linn., Syst. Nat., ed. xii, p. 1084, 1767. *Aphrodita cirrata* Müller, Prodr. Zool. Dan., No. 2644 (t. Malmgren); Fabricius, Fauna Grœnlandica, p. 308, Pl. 1, fig. 70. *Lepidonote cirrata* CErsted, Grön. Ann. Dorsib., 1843, p. 14, Pl. 1, figs. 1, 5, 6, 11, 14, 15; Stimpson, Invertebrata of Grand Manan, p. 36, 1853. *Polynœ cirrata* Sars, Arch. für. Naturg., vol. xi, 1845, p. 11, Pl. 1, figs. 12-21 (embryology).

New Haven; Watch Hill, Rhode Island; Vineyard Sound; Massachusetts Bay; Bay of Fundy and northward to Greenland; Iceland; and Spitzbergen. Northern coasts of Europe; Scotland. In the Bay of Fundy it is common from above low-water mark to 60 fathoms; in Vineyard Sound, from low-water mark to 15 fathoms; 25 fathoms off Buzzard's Bay.

**STHENELAIS PICTA** Verrill, sp. nov. (p. 348.)

(?) *Sigalion Mathildæ* Leidy, Marine Invert. Fauna of the Coasts of Rhode Island and New Jersey, p. 16, Pl. 11, f. 53, from Journal Philadelphia Acad., series ii, vol. iii, 1855 (*non* Aud. and Edw.) (?) *Sthenelais Leidyi* Quatr., op. cit., vol. i, p. 278 (no description).

Body depressed, much elongated, nearly uniform in breadth throughout; back convex; ventral surface flat. The whole dorsal surface is closely covered by the imbricated scales, of which there are more than 150 pairs. These, with the exception of the anterior and posterior pairs, are broadly lunate, with a deep emargination in the center of the anterior edge; the posterior and lateral margins are broadly rounded; the outer lateral edge is laciniately fringed; the posterior edge is smooth; the whole surface of the anterior scales is covered with minute, slightly elevated granules; farther back, the exposed portion of the surface of the scales is smooth, and the microscopic granules are restricted to the anterior and inner portions. The scales of the anterior pair are oval, and have their entire outer and anterior margins minutely but irregularly denticulate.

The head is small, rounded, contracted behind the posterior eyes and in front of the anterior ones; the eyes are near together, in a quadrangle; those in the anterior pair are a little farther apart, and lateral. The head is prolonged anteriorly into a narrow elliptical or oval portion, which forms the base of the median antennæ; close to and below each of the anterior eyes a prominent, membranous, ciliated process arises. The feet of the first pair, which are directed forward, are elongated, and bear a pair of slender, elongated, dorsal cirri, which are nearly as long as the antennæ; a much shorter, slender cirrus from the lower lobe, with a small, thin, membraneous process below; and a large fascicle of long,



slender setæ, as long as the median antennæ. The palpi are slender, longer than the antennæ; lateral feet prominent, projecting beyond the scales; setæ light yellow.

Color variable, generally light gray, with a dark brown median dorsal band, each scale often bordered on the posterior and inner edges with brown, which is connected with a blackish angular spot near the anterior margin, the rest of the scale being transparent and whitish; head dark brown, with a red central spot and a round whitish spot on each side. Length up to 150<sup>mm</sup>; breadth usually about 4<sup>mm</sup>.

Vineyard Sound, low-water mark to 14 fathoms; off Martha's Vineyard, 21 fathoms, sand; off New Haven, 4 to 5 fathoms, shelly. Great Egg Harbor (Leidy).

This species differs considerably in the form of the head, antennæ, &c., from the figure given by Leidy. His description is insufficient to determine whether he observed the same species.

**NEPHTHYS INGENS** Stimpson. Plate XII, figs. 59, 60. (p. 431.)

Marine Invertebrata of Grand Manan, p. 33, in Smithsonian Contributions, 1853.

Long Island Sound, off New Haven, 3 to 8 fathoms, mud, common; off Block Island, in 29 fathoms; Bay of Fundy, 10 to 60 fathoms.

This species is readily distinguished by the form of the head and position of the small antennæ; by the large median dorsal papilla on the proboscis, and the smaller ventral one; by the very prominent and widely separated rami of the posterior feet; and the dark color of the setæ. It grows to the length of 130<sup>mm</sup> or more.

**NEPHTHYS PICTA** Ehlers. Plate XII, fig. 57. (p. 348.)

Die Borstenwürmer, vol. i, p. 632, Pl. 23, figs. 9, 35, 1868.

Vineyard Sound, low-water mark to 8 fathoms, muddy and shelly. Nahant; Charleston (Ehlers).

**NEPHTHYS BUCERA** Ehlers. Plate XII, fig. 58. (p. 416.)

Die Borstenwürmer, vol. i, p. 617, Pl. 23, fig. 8.

Vineyard Sound, 8 to 10 fathoms, shelly; Watch Hill, Rhode Island, 4 to 5 fathoms, among rocks and sand. Massachusetts Bay (Ehlers).

This species is remarkable both for the form of the head and the length of the setæ, which often exceed the diameter of the body.

**NEPHTHYS CILIATA** Rathke.

Beiträge zur Fauna Norwegens, p. 170, 1843; Malmgren, op. cit., p. 104, Pl. 12, figs. 17, A-C, 1865; Quatrefages, op. cit., p. 429 (*Nephtys*); Ehlers, Borstenwürmer, vol. i, p. 629, Pl. 23, fig. 36, 1868. *Nereis ciliata* Müller, Zoölog. Danica, vol. iii, p. 17, Pl. 89, figs. 1-4 (t. Ehlers). *Nephtys borealis* Ersted, Annulat. Danicor. consp., p. 32, 1843 (t. Malmgren).

Ehlers gives Edgartown as a locality for this species. It is a northern form, found at Iceland, Greenland, Spitzbergen, and along the northern coasts of Europe and Great Britain. Stimpson records it from the

Bay of Fundy, in 40 fathoms, mud. It was dredged near St. George's Bank in 85, 110, and 150 fathoms, mud, by Dr. A. S. Packard, on the "Bache," 1872.

*EUMIDIA AMERICANA* Verrill, sp. nov. (p. 494.)

Body long and slender. Head triangular, subcordate, broad and slightly emarginate posteriorly, the sides rapidly converging, the front end narrow and rounded, with four slender antennæ, which are as long as the head; odd median antenna long and slender, tapering, as long as or longer than the head. Eyes moderately large, round, convex, near the posterior margin of the head. Tentacular cirri long and slender; crowded. Proboscis elongated, subclavate, enlarging to the end, which is surrounded by about fourteen triangular papillæ; the basal two-thirds covered with small, slender, prominent papillæ, which are not crowded, but arranged in longitudinal rows; this part of the proboscis is, in the preserved specimens, longitudinally ridged and transversely wrinkled; the terminal third is nearly smooth, but usually minutely granulous. The lateral lamellæ, or branchiæ, are ovate-lanceolate, leaf-like, with curved tips; posteriorly they are larger and more acute. Length up to 50<sup>mm</sup>; breadth, 1.5<sup>mm</sup>.

Vineyard Sound, 8 to 12 fathoms, among compound ascidians.

*EUMIDIA VIVIDA* Verrill, sp. nov.

Head relatively a little longer than in the preceding species, with the sides more convex, and the front rounded; antennæ long and slender. Eyes brownish, very large, about twice as large as in the preceding species. Proboscis long, slender, clavate, nearly smooth, but with a few minute, distant papillæ; the terminal orifice surrounded by about eighteen very small papilliform denticulations. Branchiæ of the anterior segments long and narrow lanceolate; of the middle segments ovate. Length up to 45<sup>mm</sup>; breadth, 1.5<sup>mm</sup>.

Vineyard Sound, 8 to 12 fathoms, among ascidians.

*EUMIDIA PAPILLOSA* Verrill, sp. nov.

Head short, rounded, convex, emarginate posteriorly, the sides convex; antennæ not very slender; median odd one stout, tapering, acute, as long as the head. Eyes large; brown. Tentacular cirri rather stout, those of the two posterior pairs more than twice as long as the others. Proboscis long, clavate, densely covered with short, rounded papillæ, and with a circle of minute papillæ at the orifice.

Length up to 40<sup>mm</sup>; breadth, 2<sup>mm</sup>.

Vineyard Sound, 6 to 10 fathoms, among compound ascidians.

*EULALIA PISTACIA* Verrill, sp. nov.

Body moderately slender, depressed. Head convex, shorter than broad; in preserved specimens, sides well rounded, posterior margin slightly emarginate; median odd antenna small, slender, considerably

shorter than the head. Eyes large, brown. Tentacular cirri moderately long; the four posterior ones considerably longer than the others. Branchiæ narrow lanceolate anteriorly; ovate and leaf-like on the middle segments; longer and lanceolate posteriorly. Proboscis long, more or less clavate, smooth, but often showing longitudinal striations, and sometimes with a few very minute scattered papillæ toward the end; the orifice surrounded by a circle of numerous minute papillæ. Color bright yellowish green (epidote-green or pistachio-green), often with obscure darker markings posteriorly, and at the base of the appendages. Length up to 40<sup>mm</sup>; breadth, 1.5<sup>mm</sup>.

Vineyard Sound, 6 to 12 fathoms, among compound ascidians; off New Haven, 4 to 5 fathoms, among hydroids.

*EULALIA GRANULOSA* Verrill, sp. nov.

Body not very slender; considerably stouter than in the preceding species, and less tapering anteriorly. Head short cordate, decidedly emarginate behind, broader than long; sides prominently rounded; front small, rounded. Antennæ short; odd one slender, originating between the eyes, more than half the length of the head. Eyes large, round, convex, dark brown. Proboscis long, clavate, thickly covered throughout with round, scarcely prominent, crowded, rather large granules, each of which has a dark central spot; orifice surrounded by a circle of small papillæ. Tentacular cirri slender, acute, the two posterior pairs long, reaching the eighth segment. Lateral appendages large and prominent for the genus. Branchiæ of upper ramus rather large, ovate, leaf-like anteriorly; larger and obliquely ovate, with acuminate tips, farther back; branchiæ of lower ramus similar in form and nearly as large. Color bright grass-green. Length 55<sup>mm</sup>, or more; breadth, 2<sup>mm</sup>; length of proboscis, 6<sup>mm</sup>.

Off New Haven, 4 to 5 fathoms, among hydroids.

*EULALIA ANNULATA* Verrill, sp. nov.

Body moderately slender, convex, tapering to both ends. Head longer than broad, somewhat oblong, truncate behind, the sides but little convex, narrowing but little to the obtusely rounded front. Proboscis covered with small prominent papillæ. Eyes two, large, dark brown or blackish, rather near together. Odd median antenna slender, more than half as long as the head, placed far in advance of the eyes; frontal antennæ rather large, about the same in length, but much stouter than the median one, with slender tips. Tentacular cirri very unequal, the two upper pairs much longer than the others, not very slender, reaching to the seventh or eighth segment in preserved specimens; the two lower pairs not more than one-third as long. Dorsal branchiæ narrow and acute throughout; the anterior ones are narrow lanceolate, with subacute tips; those farther back become still more elongated, narrow lanceolate, or almost linear lanceolate, with acuminate

tips, and in length equal to half the diameter of the body; posteriorly they become somewhat wider, with acute, curved tips. Caudal cirri small, narrow lanceolate, about as long as the posterior lateral lamellæ, or branchiæ. Color of preserved specimens pale greenish or bluish gray, with narrow annulations of golden brown, and iridescent. Length 50<sup>mm</sup>, or more; breadth about 1.25<sup>mm</sup>.

Vineyard Sound, 4 to 12 fathoms, among ascidians.

*EULALIA GRACILIS* Verrill, sp. nov.

Body very long and slender, with the segments deeply incised; posterior segments elongated. Head small, elongated, truncate behind; posterior angles not prominent, oblong, tapering but little toward the front, which is obtusely rounded; sides not swollen. Eyes of moderate size, brown, situated close to the posterior margin of the head. The four frontal antennæ are more than half as large as the head, rather stout, tapering, and the head is slightly constricted behind them; odd median one, small, slender, inconspicuous, about one-third the length of the head, placed considerably in advance of the eyes. Tentacular cirri rather stout, the two upper ones longest, rather more than twice as long as the head; the posterior pair, when extended backward, reaches the fifth setigerous segment in preserved specimens; the two lower ones are considerably stouter and smaller, nearly equal, and are somewhat longer than the head in alcoholic specimens. Branchiæ of the anterior segments short, oval, obtuse at the tip; posteriorly larger, elongated oval, leaf-like. Color light greenish brown or olive, with a row of dark brown spots along each side of the dorsal surface of the body.

Length up to 65<sup>mm</sup>; breadth about 1<sup>mm</sup>.

Vineyard Sound, 6 to 14 fathoms, among ascidians and hydroids.

This species is very active in its motions. In general appearance it resembles certain species of *Phyllodoce*, for which it might easily be mistaken, owing to the small size and translucency of the odd median antenna, which is not easily observed, especially with living specimens. The position of the tentacular cirri is, however, sufficient to distinguish the genus from *Phyllodoce* and *Eumidia*. The form of the head is quite peculiar, but somewhat resembles that of *Phyllodoce gracilis*, and also the preceding species.

One specimen of the *Eulalia gracilis* was found in which fissiparity was apparently about to take place. In this, one of the segments was larger than the rest, and had developed a distinct pair of eyes. The specimen unfortunately died before the separation took place.

*PHYLLODOCE GRACILIS* Verrill, sp. nov. Pl. XI, fig. 56. (p. 494.)

(?) *Phyllodoce maculata* A. Agassiz, Annals Lyceum New York, vol. viii, p. 333, fig. 53, 1866 (*non* Müller, *nec* CErsted).

Body very long and slender. Head longer than broad, decidedly cordate behind, with the posterior angles well rounded; the sides swell-

ing out opposite the eyes, then narrowing to near the antennæ, where there is a slight constriction, and expanding slightly at the end, which is obtusely rounded. Eyes very large, brown, wide apart, and sub-lateral, connected by a curved band of brown specks; antennæ rather large and long, about one-third as long as the head. Tentacular cirri large, the two posterior much the longest, reaching to about the eighth setigerous segment. Branchiæ of anterior segments broad oval or sub-circular, rounded at the end; posterior ones larger, broad oval, narrowed to the end. Proboscis with a large, swollen, basal portion, on which are twelve longitudinal rows of large, prominent, obtuse papillæ, about seven in each row; and a terminal smooth portion, which is somewhat longer, and about as broad at the end as the basal portion, but considerably narrower at its commencement; the orifice is surrounded by a circle of large, rounded papillæ. Color greenish, with a median dorsal row of dark brown spots, and another less conspicuous row along each side of the back, at the base of the lateral appendages.

Length up to 75<sup>mm</sup>; breadth, 1 to 1.25<sup>mm</sup>.

Watch Hill, Rhode Island, in 4 or 5 fathoms, rocky bottom.

The figure (56) copied from one of those given by Mr. Agassiz does not agree perfectly with the specimens described, but probably represents the same species. The head, as figured, is more oblong and the eyes nearer together than in my specimens; the tentacular cirri are less crowded. The anterior ones, in the preserved specimens at least, appear to arise from beneath the base of the head. Some of these differences may be due to the different states of extension and contraction; for the species in this family are all quite changeable in form during life, and usually contract very much in alcohol.

#### PHYLLODOCE CATENULA Verrill, sp. nov. (p. 494.)

Head somewhat longer than broad, slightly cordate posteriorly, with the posterior angles well rounded, and the sides full and convex; front broadly rounded, and with a slight emargination in the middle. Eyes large, dark brown, placed on the dorsal surface of the head; antennæ rather long, slender. Tentacular cirri long and slender, the two posterior much longer than the others. Branchiæ of anterior segments broad ovate, with rounded tips; farther back larger and longer, ovate, leaf-like, with acuminate tips. Proboscis with twelve rows of papillæ on the basal portion, which are prominent, somewhat elongated, obtuse, seven or eight in the lateral rows, those in each row close together. Color of body and branchiæ pale green, with a median dorsal row of dark brown spots, one to each segment; and two lateral rows, in which there is a spot at the base of each "foot;" head pale, or greenish white.

Length up to 75<sup>mm</sup>; breadth about 1.5<sup>mm</sup>.

Watch Hill, Rhode Island, in 4 to 6 fathoms, among rocks and algæ, and in tide-pools; Wood's Hole, at surface, evening, July 3. Very common in the Bay of Fundy, from low-water to 50 fathoms.

This species is closely allied to *P. pulchella* Malmgren, from Northern Europe, but differs somewhat in the form of the head, which is shorter and rounder in the latter; the branchiæ also differ in form. It is a very active species, and secretes a large quantity of mucus.

*ETEONE ROBUSTA* Verrill, sp. nov. (p. 488.)

Body large, stout, depressed, broadest in the middle, tapering gradually to each end. Head small, about as long as wide, convex, with a median depression; the sides rounded; front obtusely rounded. The four frontal antennæ are very small, short, obtuse, less than half the diameter of the head. Eyes very small, black. Tentacles very small and short, tapering, their length about one-half the diameter of the head, the two pairs about equal. Branchiæ small, sessile, anteriorly very small, oval, obtuse; in the middle region rounded, sub-oval. Color dark green, with the anterior portion somewhat paler, and with light green transverse bands between the segments; lateral appendages pale green.

Length, 125<sup>mm</sup>; breadth in middle, 5<sup>mm</sup>; length of head, 0.6<sup>mm</sup>.

Watch Hill, Rhode Island, under stones, between tides, April 12, 1873.

*ETEONE LIMICOLA* Verrill, sp. nov. (p. 349.)

Body very long and slender, tapering gradually to both ends; depressed, and with deeply incised, elongated segments posteriorly; less depressed and with shorter and less distinct segments anteriorly. Head small, about as broad as long, the posterior angles well rounded, the sides with a slight constriction in advance of the eyes, narrowing rapidly; front narrow, convex; antennæ slender, about half the length of the head. Eyes minute, inconspicuous. Tentacular cirri about equal to the length of the head. Lateral appendages small on the anterior segments, becoming much more prominent farther back; anterior branchiæ very small, ovate, sessile; those farther back much larger, and narrow ovate. Color, when living, light green throughout.

Length about 80<sup>mm</sup>; breadth, including appendages, 1.5<sup>mm</sup>.

Great Egg Harbor, New Jersey, in mud at low-water.

*ETEONE SETOSA* Verrill, sp. nov.

Body long and slender, resembling the preceding in form, but somewhat less slender. Head shorter and broader, the posterior angles prominently rounded; two slight notches or emarginations on the posterior margin, the middle portion extending farther back than the lateral; sides rapidly tapering; front narrow. Antennæ less than half the length of the head. Eyes small, but quite distinct. Tentacular cirri scarcely as long as the head. Lateral appendages a little prominent on the anterior segments, but much less so than farther back; setæ numerous. The branchiæ are small, sessile, and inconspicuous anteriorly; larger and ovate farther back.

Length up to 75<sup>mm</sup>; breadth about 2<sup>mm</sup>.

Vineyard Sound, 6 to 12 fathoms, among ascidians.

ETEONE, species undetermined.

A small and slender species was dredged off Gay Head, in 19 fathoms, soft mud.

Another very peculiar species of *Eteone* was obtained at Great Egg Harbor, New Jersey. In this the head is depressed and elongated, tapering, with short antennæ. The anterior part of the body is round and with the lateral appendages very small, closely appressed, and not at all prominent, giving to this part of the body a smooth appearance; on this part of the body the branchiæ are very small, lunate, sessile, closely appressed; farther back they become much larger, and rounded or ovate, while the setigerous lobe becomes prominent, and the setæ much longer and more numerous.

PODARKE OBSCURA Verrill, sp. nov. Pl. XII, fig. 61. (p. 319.)

Body convex above, flat below, with the segments deeply incised at the sides, moderately slender in full extension, but capable of great contraction, tapering gradually to the caudal extremity, and less toward the head. Head small, broader than long, emarginate in front, sides forming rounded angles; posterior margin nearly straight. Antennæ five, subequal, the outer pair articulated upon a short, thick basal segment; the odd median one is somewhat shorter, articulated upon a small basal segment, which arises in front of the anterior pair of eyes. Tentacular cirri long, slender, six on each side, two arising from each of the first three annulations, on each side; those on the middle are longest, those on the first shortest. Eyes four, small, red; those on each side close together, but those of the anterior pair are farthest apart. Proboscis with a large, swollen basal portion, and a smaller cylindrical terminal portion, the surface nearly smooth. Lateral appendages, or "feet," elongated, biramous. The upper branch is short, conical, bearing at its extremity a long, slender dorsal cirrus, nearly as long as the breadth of the body, or even exceeding it, and having a short basal joint; the setæ of the upper ramus are very few and small. The lower branch is much larger and longer, thick at base, tapering somewhat to the obtuse end, from which a small, terminal, obtuse, papilliform process arises; the short, acute, ventral cirrus arises from about the terminal third, and is less than half as long as the dorsal cirrus; the setæ are numerous and long, forming a broad, fan-shaped fascicle, in which the middle setæ are considerably longer than the upper and lower ones, and in length about equal to the setigerous lobe; these setæ are all compound, the middle ones having a very long, slender, acute terminal joint, and the shorter ones beneath having a much shorter terminal joint. Last segment small, rounded, bearing two long, slender anal cirri, much longer than the dorsal cirri. Color variable, most commonly very dark brown or blackish; sometimes dark brown with transverse bands of light flesh-color between the segments, and two intermediate transverse whitish lines on each segment.

Length up to 40<sup>mm</sup> when extended; breadth, including setæ, 3<sup>mm</sup>.

Wood's Hole, among eel-grass and at the surface, very abundant, especially at night, in July and August; also under stones, between tides.

**AUTOLYTUS CORNUTUS** A. Agassiz. Pl. XIII, figs. 65, 66. (p. 397.)

Journal Boston Society of Natural History, vol. vii, p. 392, Plates 9-11, 1863.

Great Egg Harbor, New Jersey; New Haven; Watch Hill; Vineyard Sound; Massachusetts Bay; Eastport, Maine. Low-water mark to 15 fathoms.

**AUTOLYTUS**, species undetermined. (p. 398.)

Off New Haven, 4 to 6 fathoms, shelly, among hydroids.

**AUTOLYTUS**, species undetermined.

Females, filled with eggs, of a large species of this genus were taken at the surface of Vineyard Sound, April 30, by Mr. V. N. Edwards. These were about 40<sup>mm</sup> in length, as preserved in alcohol, and rather stout, tapering to each end. The head is small, short, rounded in front. The eyes are small, and the two pairs are near together. The odd median antenna is more than twice as long as the breadth of the head; the lateral ones are about half as long; the first six setigerous segments have short setæ; the following ones have a fascicle of long, slender ones, equal to the breadth of the body.

**SYLLIS**, species undetermined. (p. 453.)

A single specimen from Vineyard Sound. The body is about 12<sup>mm</sup> long; the antennæ are not very long; the palpi short; the dorsal cirri are rather long, and, like the antennæ, regularly beaded; the ventral cirri are small, tapering; the setæ are numerous, rather short.

**GATTIOLA**, species undetermined. (p. 453.)

Young specimens were taken several times in Vineyard Sound, at the surface. Adult specimens of a fine species of this genus were dredged in the Bay of Fundy in 1872, in 80 fathoms.

**NEREIS VIRENS** Sars. Pl. XI, figs. 47-50. (p. 317.)

Beskrivelser og Iakttagelser, etc., p. 58, Pl. 10, fig. 27, a, b, c, 1835 (t. Malmgren).

*Nereis grandis* Stimpson, Invertebrata of Grand Manan, p. 34, fig. 24, 1853.

*Nereis Yankiana* Quatrefages, Hist. des Annelés, i, p. 553, Pl. 17, figs. 7, 8

1865; *Alitta virens* Malmgren, op. cit., p. 183; Annulata polychæta, p. 56, Pl. 3, figs. 19, A-E, 1867.

New Haven, at low water; Watch Hill; Vineyard Sound; Massachusetts Bay; Eastport, Maine; northward to Labrador. Northern coasts of Europe to Great Britain.

**NEREIS LIMBATA** Ehlers. Pl. XI, fig. 51. (p. 318.)

Die Borstenwürmer, vol. i, p. 567, 1868.

Charleston, South Carolina, to Massachusetts Bay; half-tide mark to 4 to 6 fathoms in Long Island Sound.



**NEREIS PELAGICA** Linn. Pl. XI, figs. 52-55. (p. 319.)

*Systema naturæ*, ed. x, p. 654; ed. xii, p. 1086; Malmgren, *Annulata polychæta* p. 47, Pl. 5, figs. 35, A-D, 1867; Ehlers, op. cit., p. 511, Pl. 20, figs. 11-20, 1868. *Heteronereis grandifolia* Malmgren, *Nordiska Hafs-Annulater*, p. 108, Pl. 11, figs. 15, 16, B, B<sup>1</sup>, C; *Ann. polychæta*, p. 60, Pl. 5, figs. 31, A-D; *Heteronereis arctica* Örsted, *Grønland's Annul. dorsibr.*, p. 27, Pl. 4, figs. 50\*, 51, 60, Pl. 5, figs. 65, 68 70\*, male (t. Ehlers); *Heteronereis assimilis* Örsted, op. cit., p. 28, Pl. 4, figs. 54, 61, Pl. 5, fig. 72, female (t. Ehlers).

Off New Haven; Watch Hill; Vineyard Sound; northward to Labrador. Greenland; Iceland; Spitzbergen; northern coasts of Europe to Great Britain. In the Bay of Fundy from low-water mark to 106 fathoms, common.

**NEREIS FUCATA** Aud. and Edwards. (p. 494.)

*Histoire nat. litt. de la France*, vol. ii, p. 188 (teste Malmgren); *Lycoris fucata* Savigny, *Syst. des Annélides*, p. 31, 1820 (t. Ehlers); *Descr. de l'Égypte*, éd. 2, xxi, p. 357 (t. Malmgren); *Nereilepas fucata* Malmgren, *Annulata polychæta*, p. 53, Pl. 3, figs. 18-18 E; Johnston, *Catalogue*, p. 158, fig. 30, 1865. *Heteronereis glaucopis* Malmgren, *Nordiska Hafs-Annulater*, Öfvers. af Kongl. Vet. Akad. Förh., 1865, p. 181, Pl. 11, figs. 16, 16 A; *Annulata polychæta*, p. 60, Pl. 4, figs. 26, 27, 1867. *Nereis fucata* Ehlers, *Borstenwürmer*, vol. i, p. 546, Pl. 21, figs. 41-44.

A specimen was dredged at Watch Hill, Rhode Island, in 4 to 6 fathoms, among rocks and algæ, which agrees well with Malmgren's description and figure of *Heteronereis glaucopis*. Ehlers regards the latter as the heteronereis-form of *N. fucata*.

**NEREIS**, species undetermined.

Head sub-conical; antennæ small, slender; palpi small, shorter, and thicker; two upper pairs of tentacular cirri moderately elongated, subequal, lower ones very small. Posterior eyes elongated and on the upper side of the head; anterior pair small, lateral. Feet terminated by four small papillæ; dorsal and ventral cirri small, slender.

The only specimen observed is preserved in alcohol; it is a female filled with eggs. Vineyard Sound, 6 to 8 fathoms.

**NECTONEREIS** Verrill, genus nov.

Head prominent, depressed, oval, rounded in front, bearing two pairs of large eyes on the upper and lateral surfaces, and a pair of small antennæ beneath; palpi small or rudimentary. Tentacular cirri four on each side, as in *Nereis*. Proboscis small, similar to that of *Nereis*, but more simple; furnished with a pair of terminal hooks; with two anterior clusters of denticles on the upper side, and with five small clusters below, in a ring extending nearly half-way around it. Anterior part of body fusiform, consisting of about fourteen segments, on which the feet are divided into small, rounded lobes, with small ventral cirri; and with long dorsal cirri, those on the first seven segments swollen and gibbous toward the end, with a small acute terminal portion. Posterior part of

the body composed of numerous short segments, on which the feet are furnished with lamelliform appendages.

This remarkable annelid bears some resemblance, in the structure of the body and "feet," to *Heteronereis*, and there is probably another form to which it bears the same relation that *Heteronereis* bears to *Nereis*; but the structure of the head is very unlike that of any known genus, and, indeed, would not allow it to be placed in the family of *Nereidæ* without modifying the family-characters. There are no large palpi, corresponding to those of *Nereis*, and nothing to represent them, unless two small lobes close to the mouth be considered rudimentary palpi.

NECTONEREIS MEGALOPS Verrill, sp. nov. Plate XII, figs. 62, 63. (p. 440.)

Body slender, consisting of two parts; the anterior portion, containing fourteen setigerous segments, is broadest in the middle, tapering both ways, and separated from the posterior portion by a distinct constriction; the posterior portion is much longer and more slender, tapering gradually to the end, and consists of very numerous short segments, which are furnished with complex lateral appendages, with thin lamellæ and compound bladed setæ. Head broad oval, somewhat convex, and very smooth above; the lateral margins a little convex; the front obtusely rounded. Eyes very large, convex; the anterior ones largest, lateral and partially dorsal, oval; in contact with the posterior ones, which are somewhat smaller and more dorsal. Two small decurved antennæ, with swollen bases, are on the ventral side of the head; two small, rounded processes in front of the mouth. Tentacular cirri slender, the upper pair much the longest; the rather short lower pair arising near the mouth; the two intermediate pairs arise behind and close to the anterior eyes; all are slightly annulated. The "feet" on the first seven segments have a large dorsal cirrus, increasing in length from the first to the seventh, narrow at base, swollen and gibbous toward the end, with a slender, oblique, terminal portion; on the seven following segments the dorsal cirri are smaller, slender, tapering; the ventral cirri are small, with swollen bases on the first five segments, slender and tapering on the rest; the intermediate lobes of the feet are small and rounded, but more elongated on the first five segments. Setæ of different forms, many of them with a slender, often curved, acute terminal piece.

The lateral appendages of the posterior region have, on the upper ramus, a long, slender dorsal cirrus, strongly crenulate-lobed on the lower side; a small, rounded lamelliform process above its base; and a long, lanceolate process arising just below it, and in length equaling the cirrus; an ovate setigerous lobe, bearing a broad fan-shaped fascicle of compound setæ, extending about to the end of the dorsal cirrus; and a lower ovate-lanceolate lamelliform process, with the base expanded and extending backward, the tip reaching to about the outer third of

the cirrus; a single strong black spine supports the setigerous lobe. The lower ramus has a rounded setigerous lobe, and a large broadly-rounded lamelliform process, nearly as long as the longest one of the upper ramus and much broader; the setigerous lobe bears a broad fan-shaped fascicle of compound setæ, similar to those of the upper ramus, but a little shorter, and a single black basal spine; the ventral cirrus is slender, and there is a broad, rounded ventral lamella at its base. The setæ are rather stout, with a broad, thin, blade-like, terminal piece, which is generally lanceolate, with a rounded point, and often somewhat curved, but more commonly straight. A few setæ have a slender acute terminal piece. Anal segment with numerous small slender papilliform processes on each side, forming a circle.

Length up to 35<sup>mm</sup>; breadth about 2.5<sup>mm</sup>.

Vineyard Sound, swimming actively at the surface, both in the evening and in the brightest sunshine, in the middle of the day; July 3 to August 11.

**DIOPATRA CUPREA** Claparède. Plate XIII, figs. 67, 68. (p. 346.)

Annélides chétopodes du golfe de Naples, in Mémoires de la Société de Physiques et d'Hist. Nat. de Genève, vol. xix, p. 432, 1868. *Nereis cuprea* Bosc, Hist. nat. des Vers, vol. i, p. 143 (t. Claparède).

Charleston, South Carolina, to Long Island Sound and Vineyard Sound.

**MARPHYSA LEIDYI** Quatrefages. Plate XII, fig. 64. (p. 319.)

Histoire nat. des Annelés, vol. i, p. 337, 1865 (*M. Leidii*). *Eunice sanguinea* Leidy, Mar. Inv. Fauna of Rhode Island and New Jersey, p. 15, 1855 (*non* Montagu).

Great Egg Harbor, New Jersey, to Long Island Sound and Vineyard Sound. Low-water mark to 10 fathoms.

**LYCIDICE AMERICANA** Verrill, sp. nov. (p. 508.)

Body depressed, slender, narrowed toward each end; segments well-marked. Head much depressed, oblong, narrowed somewhat toward the front, which is truncate and somewhat emarginate in the middle; lower side bilobed, the lobes well rounded. The two eyes are lateral, just outside the bases of the lateral antennæ. The three antennæ are subequal, nearly as long as the diameter of the head; the odd median one is apparently a little longer than the lateral, and placed slightly farther back. The dorsal cirri are long and slender, exceeding the diameter of the body in living specimens; they have a small lobe near the base. Anal cirri four; the two lower exceeding the diameter of the body; the two upper ones less than half as long. Color light red, with a bright red dorsal vessel and dark brown intestines, showing through in the middle; eyes dark red.

Length, while living, about 40<sup>mm</sup>; greatest diameter, 1.5<sup>mm</sup>.

Off Gay Head, in 19 fathoms, soft mud.

NEMATONEREIS, species undetermined. (p. 508.)

A species, apparently belonging to this genus, was dredged in 29 fathoms, east of Block Island. The specimens have been lost or mislaid. In life the head was small, rounded, with one median dorsal antenna, about as long as the diameter of the head. Eyes two, small but conspicuous, dark brown. Dorsal cirri slender.

LUMBRICONEREIS FRAGILIS Örsted. (p. 507.)

Consp. Ann. Dan., p. 15, figs. 1, 2, 1843 (t. Malmgren). *Lumbricus fragilis* Müller, Prod. Zool. Dan., p. 216; Zool. Dan., vol. i, p. 22, Pl. 22, figs. 1-3, 1788, (t. Malmgren). *Lumbrinereis fragilis* Malmgren, Annulata polychæta, p. 63, Pl. 14, figs. 83-83, D.

Mouth of Vineyard Sound and deeper waters outside; northward to Nova Scotia and Gulf of Saint Lawrence. Northern coasts of Europe. From low-water mark, in the Bay of Fundy, to 430 fathoms, off Saint George's Bank.

LUMBRICONEREIS OPALINA Verrill, sp. nov. Plate XIII, figs. 69, 70. (p. 342.)

*Lumbriconereis splendida* Leidy., op. cit., p. 15 (non Blainville).

Body cylindrical, much elongated, largest in the middle, tapering gradually toward the head, which is comparatively small; segments well marked. Head conoidal, obtuse, changing much in form during life; in extension considerably longer than broad, and more acute than in the figure. Eyes four, in a transverse row, the two middle ones larger and a little in advance of the others. The lateral appendages, or "feet," consist of a short, obtusely-rounded basal papilla, which bears the setæ; from the posterior and ventral end of this a prominent elongated lobe arises, which is somewhat curved and obtuse. These appendages are longer in the middle of the body than anteriorly. Setæ five to nine in each fascicle, and of several forms; one or two in each fascicle usually have a long, slender, flexible capillary point. Color reddish or brownish, with brilliant iridescence.

Length up to 400<sup>mm</sup>; diameter in middle, 3<sup>mm</sup>.

New Haven to Vineyard Sound; low-water mark to 14 fathoms.

LUMBRICONEREIS TENUIS Verrill, sp. nov. (p. 342.)

Body very long, slender, filiform, of nearly uniform diameter throughout, capable of great extension; segments very numerous, well marked. Head a little narrower than buccal segment, depressed, obtusely pointed or rounded in front, without eyes. In the first to ninth pairs the lateral appendages have about six slender lanceolate setæ; those of the ninth pair have two slender spatulate setæ, with about six or seven lanceolate ones; at the sixteenth pair they begin to have recurved spatulate setæ, with two or three hook-like denticles at the end, while two or three lanceolate ones remain; posterior to the twenty-third or twenty-fourth pair only one of the long, slender, acute setæ remains, accompanied by